

**AVICENNIA TONDUZII** Moldenke

Additional bibliography: Moldenke, *Phytologia* 36: 440 & 450. 1977; Moldenke, *Biol. Abstr.* 65: 71. 1978.

Liesner describes this species as a tree, 5 m. tall, and found it growing at the edge of the mangrove association.

Additional citations: COSTA RICA: Puntarenas: Liesner 2203 (N).

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ADDITIONAL NOTES ON THE GENUS BAILLONIA. IV

Harold N. Moldenke

**BAILLONIA** Bocq.

Additional & emended bibliography: Darlington & Wylie, *Chrom. Atlas*, ed. 2, imp. 1, 323. 1956; J. Hutchins., *Evol. & Phylog. Flow. Pl. Dicot.* [471] & 670, fig. 416. 1969; Rouleau, *Guid. Ind. Kew.* 22. 1970; Hocking, *Excerpt. Bot. A.26:* 6. 1975; Moldenke, *Phytologia* 30: 180—182, 506, & 508 (1975) and 32: 51. 1975; Moldenke, *Biol. Abstr.* 60: 68. 1975; Moldenke, *Phytologia* 32: 507. 1976.

**BAILLONIA AMABILIS** Bocq.

Additional & emended bibliography: J. Hutchins., *Evol. & Phylog. Flow. Pl. Dicot.* [471] & 670, fig. 416. 1969; Hocking, *Excerpt. Bot. A.26:* 6. 1975; Moldenke, *Phytologia* 30: 182. 1975; Moldenke, *Biol. Abstr.* 60: 68. 1975.

Additional illustrations: J. Hutchins., *Evol. & Phylog. Flow. Pl. Dicot.* [471], fig. 416. 1969.

**BAILLONIA AMABILIS** var. **PUBESCENS** Moldenke

Additional bibliography: Hocking, *Excerpt. Bot. A.26:* 6. 1975; Moldenke, *Phytologia* 30: 182. 1975; Moldenke, *Biol. Abstr.* 60: 68. 1975.

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ADDITIONAL NOTES ON THE GENUS BOUCHEA. VI

Harold N. Moldenke

**BOUCHEA** Cham.

Additional synonymy: Verbena b. Bouchea Endl. apud Schau. in A. DC., *Prodr.* 11: 557, in syn. 1847. Bouhea Moldenke, *Phytologia* 30: 184, *sphalm.* 1975.

Additional & emended bibliography: P. Herm., *Paradis. Batav. Prodr.*, ed. Warton. 1689; L., *Sp. Pl.*, ed. 2, 27—28. 1762; Sweet,

Hort. Brit., ed. 1, 1: 324 (1826), ed. 2, 418 (1830), and ed. 3, 552. 1839; Spach, Hist. Nat. Veg. Phan. 9: 227. 1840; Schnitzl., Iconogr. Fam. Nat. 2: 137 Verbenac. [3]. 1856; Buek, Gen. Spec. Syn. Candoll. 3: 64, 447, 448, 494—496, & 507. 1858; J. C. & M. Willis, Rev. Cat. Flow. Pl. Ceyl. [Parad. Man. Bot. 2:] 68 & 155. 1911; Loes., Verh. Bot. Ver. Brand. 53: 79. 1912; Wangerin in Just, Bot. Jahresber. 46 (1): 717. 1926; Xavier Louis & Monod, Bull. Agence Gén. Colon. Autonom. 27: 605 & 626. 1934; Gunawardena, Gen. Sp. Pl. Zeyl. 146. 1968; Bolkh., Grif, Matvej., & Zakhar., Chrom. Numb. Flow. Pl., imp. 1, 714. 1969; Moldenke, Biol. Abstr. 50: 6948. 1969; G. W. Thomas, Tex. Pl. Ecol. Summ. 77. 1969; Rouleau, Guide Ind. Kew. 28. 1970; J. Mukherjee, Trans. Bose Res. Inst. 35: 37—42, pl. 1 & 2. 1972; Bolkh., Grif, Matvej., & Zakhar., Chrom. Numb. Flow. Pl., imp. 2, 714. 1974; El-Gazzar, Egypt. Journ. Bot. 17: 75 & 78. 1974; H. D. Gibbs, Chemotax. Flow. Pl. 3: 1753—1755 (1974) and 4: 2058. 1974; Hocking, Excerpt. Bot. A.23: 290. 1974; León & Alain, Fl. Cuba, imp. 2, 2: 279 & 294—295, fig. 127. 1974; Asher, Guide Bot. Period. 2: 59. 1975; Hinton & Rzedowski, Anal. Esc. Nac. Cienc. Biol. 21: 40. 1975; Hocking, Excerpt. Bot. A.26: 6. 1975; Kooiman, Act. Bot. Neerl. 24: 463 & 465. 1975; Moldenke, Biol. Abstr. 60: 67 & 68. 1975; Moldenke, Phytologia 30: 182—186, 201—204, 206, 208, 506, 507, & 509 (1975), 31: 122, 124, 234—236, 378—380, 382, 391, 393, 396, 409, & 412 (1975), 32: 229, & 507 (1976), and 34: 251, 253—255, 258, 269, 272, 278, 279, & 500. 1976; Follman-Schrag, Excerpt. Bot. A.26: 504. 1976; S. R. Hill, Rhodora 78: 33. 1976; Hocking, Excerpt. Bot. A.28: 257. 1976; Soukup, Biota 11: 3, 6—7, & 21. 1976; López-Palacios, Fl. Venez. Verb. 20, 204—215, 505, 646—649, & 651—654. 1977; Moldenke, Phytologia 36: 32, 41, 47, 48, & 501. 1977; Powell, Econ. Bot. 31: 424. 1977; Moldenke, Phytologia 40: 263. 1978; A. L. Moldenke, Phytologia 40: 361. 1978.

Mukherjee (1972) says that "The genus Bouchea of Schauer have [sic] been divided into [sic] three distinct genera, Chascamun, Svensonia and Bouchea on the basis of gross morphological characters. The habit, range of phytogeographical distribution, etc., also confirm the division. Pollen morphology, also is in accord with this division. The pollen grains of Bouchea are 3-porate while the pollen of [the] others are [sic] 3-colpate. Differential surface patterns of 3 colpate pollen justify their individual generic status, e.g. pollen of Chascamun is negatively reticulate while those [sic] of Svensonia are finely punctitegillate, tectum beset with supertectal processes."

López-Palacios (1977) says "en Venezuela, aunque en el Brasil se la emplea a veces con lo mismo usos que la Verbena". He also says that in Venezuela members of the genus Bouchea commonly have the vernacular name, "verbena", like members of the genera Stachytarpheta and Verbena; this is true also, he avers, in Colombia and Ecuador for these genera and Hierobotana.

The Endlicher (1838) reference cited in the bibliography of Bouchea is often cited as "1836—1856", but the pages involved

here were actually issued in 1838.

The Stopp M.62, distributed as Bouchea sp., actually is Chas-camm dehisens (L. f.) Moldenke, while Breedlove 10268 and Viereck 686 are actually Ghinia curassavica (L.) Oken, Harley 15097 is Stachytarpheta lacunosa Schau., and Harley 15136 is S. hispida Nees & Mart.

#### BOUCHEA AGRESTIS Schau.

Additional bibliography: Buek, Gen. Spec. Syn. Candoll. 3: 64 & 558. 1858; J. Mukherjee, Trans. Bose Res. Inst. 35: 41. 1972; Moldenke, Phytologia 29: 43. 1974; Hocking, Excerpt. Bot. A.26: 6. 1975.

#### BOUCHEA BOLIVIANA (Kuntze) Moldenke

Additional bibliography: Moldenke, Phytologia 29: 43. 1974.  
Additional citations: BOLIVIA: Santa Cruz: R. F. Steinbach 789 (Ut—328611B).

#### BOUCHEA BOYACANA Moldenke

Additional bibliography: Moldenke, Biol. Abstr. 60: 68. 1975; Moldenke, Phytologia 30: 183 & 185 (1975) and 34: 255. 1976; Hocking, Excerpt. Bot. A.28: 257. 1976; Soukup, Biota 11: 7. 1976; Moldenke, Phytologia 36: 32. 1977.

López-Palacios & Idrobo refer to this plant as an "hierba erecta de 40—60 cm. de alto. Flor morado claro" or "1—1.20 m. de alto y 1.5 cm. de diámetro" [for their no. 3628], flowering and fruiting in August. Other collectors describe it as a robust herb, 1—1.5 m. tall, "algo pilosos", and encountered it at 1200—1800 m. altitude, flowering in September and November, and fruiting in September. The corollas on López-Palacios 4021 are said to have been "rose-purple" when fresh.

Additional citations: COLOMBIA: Antioquia: López-Palacios 4021 (Ld). Boyacá: Cuatrecasas 1954 (W—2780349). Cundinamarca: López-Palacios 3628 (Ld, N). Valle del Cauca: López-Palacios & Idrobo 3707 (N, Z).

#### BOUCHEA BOYACANA var. GLABRATA Moldenke

Additional bibliography: Moldenke, Phytologia 29: 44 & 48. 1974; Soukup, Biota 11: 7. 1976.

Additional citations: PERU: Piura: Hutchison & Wright 6592 (Mu—istype, N—istype).

#### BOUCHEA DISSECTA S. Wats.

Additional bibliography: Moldenke, Phytologia 29: 44—45. 1974; Hinton & Rzedowski, Anal. Esc. Nac. Cienc. Biol. 21: 40. 1975.

#### BOUCHEA FLUMINENSIS (Vell.) Moldenke

Additional synonymy: Bouchea fluminensis Moldenke, Phytologia

30: 184, sphalm. 1975.

Additional & emended bibliography: Buek, Gen. Spec. Syn. Candoll. 3: 64, 494, 495, 557, & 572. 1858; Bolkh., Grif, Matvej., & Zakhar., Chrom. Numb. Flow. Pl., imp. 1, 714. 1969; J. Mukherjee, Trans. Bose Res. Inst. 35: 41. 1972; Bolkh., Grif, Matvej., & Zakhar., Chrom. Numb. Flow. Pl., imp. 2, 714. 1974; Moldenke, Biol. Abstr. 60: 68. 1975; Moldenke, Phytologia 30: 183—184. 1975; Soukup, Biota 11: 7. 1976; López-Palacios, Fl. Venez. Verb. [204], 206, 646, & 654. 1977; Moldenke, Phytologia 36: 41 (1977) and 40: 263. 1978.

Additional illustrations: López-Palacios, Fl. Venez. Verb. [204], fig. 46. 1977.

Recent collectors describe this plant as a shrub, 1.3—1.5 m. tall, and found it growing on riverbanks and along trails at forest margins, from sealevel to 3840 feet altitude, in flower in January and February, and in fruit in February. The corollas are said to have been "blue" on Gentry 10063, "light blue-violet" on Flowman & Davis 4872, "lilac" on Hatschbach 38535, and "dark-lilac" on Hatschbach 37871. The corollas and leaves are especially large on Hatschbach 37871.

Curiously, material of B. fluminensis has been misidentified and distributed in some herbaria as Pitreaea cuneato-ovata (Cav.) Caro.

Additional citations: ECUADOR: Guayas: A. Gentry 10063 (W—2788432). PERU: Cuzco: Flowman & Davis 4872 (Ld). BRAZIL: Minas Gerais: Irwin 2239 (Au—173160). Paraná: Hatschbach 37871 (Ld), 38535 (Ld). ARGENTINA: Salta: Figueria, Legname, Schiavone, & Cuezco 11648c (Ld).

#### BOUCHEA FLUMINENSIS var. PILOSA Moldenke

Synonymy: Bouchea fluminensis var. pilosa Moldenke, Phytologia 30: 184, sphalm. 1975.

Additional bibliography: Moldenke, Biol. Abstr. 60: 68. 1975; Moldenke, Phytologia 30: 183 & 184 (1975) and 36: 41. 1977.

Hatschbach describes this plant as a shrub, 1.5—1.7 m. tall, and found it growing at the edges of streams, flowering in January, fruiting in January and October. The corollas on both his collections cited below are said to have been "lilac".

Additional citations: BRAZIL: Paraná: Hatschbach 35179 (Ld), 35674 (Ld).

#### BOUCHEA INOPINATA Moldenke

Additional bibliography: Moldenke, Phytologia 29: 49 (1974) and 34: 272. 1976.

#### BOUCHEA LINIFOLIA A. Gray

Additional bibliography: G. W. Thomas, Tex. Fl. Ecol. Summ. 77. 1969; Moldenke, Biol. Abstr. 60: 68. 1975; Moldenke, Phytologia 30: 184. 1975.

Recent collectors describe this plant as a perennial, bush, or common, small, rounded, beautiful shrub, to 1 m. tall, with large flowers, and found it on northeast-facing slopes and in "matorral submontano vegetation on dry hillsides above a canyon waterhole in very thin calcareous soil in crevices of limestone rock, growing with Agave lechuguilla, Acacia rigidula, and Fraxinus greggii", at 5000 feet altitude, flowering from May to August, fruiting in August. They refer to the plant as "infrequent" in Brewster County, Texas and as "infrequent here [Val Verde County] but quite common on some of the limestone ridgetops". Thomas (1969) calls it the "groovestem bouchea".

The corollas are said to have been "blue-lavender" on Chiang, Wendt, & Johnston 7511, "bright-reddish" on Gentry & Engard 23233, "lavender" on Correll & Hanson 29885, "purplish" on Warnock, Turner, & Parks 1177, and "purple" on Smith & Butterwick 186.

Additional citations: TEXAS: Brewster Co.: Warnock, Turner, & Parks 1177 (Ld, Ld). Pecos Co.: Correll & Hanson 29885 (Ld, Ld). Val Verde Co.: Smith & Butterwick 186 (Ld). MEXICO: Coahuila: Chiang, Wendt, & Johnston 7511 (Ld); Gentry & Engard 23233 (W-2815781); Hinckley s.n. [20-VIII-1968] (Te-6708h); Johnston & Muller 342 (Mi).

#### BOUCHEA NELSONII Grenz.

Additional bibliography: Hinton & Rzedowski, Anal. Esc. Nac. Cienc. Biol. 21: 40. 1975; Moldenke, Biol. Abstr. 60: 68. 1975; Molina R., Ceiba 19: 95. 1975; Moldenke, Phytologia 30: 184 (1975) and 34: 269. 1976.

Colaris encountered this plant growing along roadsides, flowering and fruiting in September. The corollas are said to have been "lilac" on Colaris 1484.

Material of B. nelsonii has been misidentified and distributed in some herbaria as Verbena delicatula Mart.

Additional citations: MEXICO: Oaxaca: Colaris 1484 (Ut-328618B). CULTIVATED: Germany: Herb. Zuccarini s.n. [Hort. Bot. Monac. 1834] (Mu-306).

#### BOUCHEA PRISMATICA (L.) Kuntze

Additional synonymy: Verbena americana annua, folio ocymi P. Herm., Parad. Batav. Prodr. ed Warton. 1689. Verbena diandra, spicis laxis, calycibus alternis prismaticis truncatis aristatis, foliis ovatis obtusis L., Sp. Pl., ed. 2, 27, in syn. 1762. Verbena, scutellariae s. cassidae folio, dispermos americana Pluk. ex L., Sp. Pl., ed. 2, 28, in syn. 1762. Zapania prismatica Poir. apud Schau. in A. DC., Prodr. 11: 558, in syn. 1847. Bouchea prisantia (L.) Kuntze ex Moldenke, Phytologia 34: 272, in syn. 1976. Denisea prismatica [(L.) Kuntze] apud López-Palacios, Fl. Venez. Verb. 648, in syn. 1977.

Additional & emended bibliography: Breyn., Prodr. Fasc. Rar.

Fl., ed. 1, 2: 104. 1688; P. Herm., *Paradis. Batav. Prodr.* ed Warton. 1689; Breyne., *Prodr. Fasc. Rar. Pl.*, ed. 2, 2: 104. 1739; L., *Sp. Pl.*, ed. 2, 27—28. 1762; Sweet, *Hort. Brit.*, ed. 1, 1: 324 (1826), ed. 2, 418 (1830), and ed. 3, 552. 1839; Buek, *Gen. Spec. Syn. Candoll.* 3: 64, 447, 448, 495, 507, 558, & 572. 1858; Kuntze, *Rev. Gen. Pl.* 2: 502. 1891; Loes., *Verh. Bot. Ver. Brand.* 53: 79. 1912; G. W. Thomas, *Tex. Pl. Ecolog. Summ.* 77. 1969; J. Mukherjee, *Trans. Bose Res. Inst.* 35: 38—39 & 41, text fig. 1, & pl. 1, fig. 1—5. 1972; León & Alain, *Fl. Cuba*, imp. 2, 2: 294—295, fig. 127. 1974; Hinton & Rzedowski, *Anal. Esc. Nat. Cienc. Biol.* 21: 40. 1975; Moldenke, *Biol. Abstr.* 60: 68. 1975; Moldenke, *Phytologia* 30: 183—186 (1975) and 31: 378—380, 382, 391, 393, 396, 409, 410, & 412. 1975; Molina R., *Ceiba* 19: 95. 1975; S. R. Hill, *Rhodora* 78: 33. 1976; Moldenke, *Phytologia* 34: 253—255, 272, 278, & 279 (1976) and 36: 48. 1977; López-Palacios, *Fl. Venez. Verb.* 206—215, 646—649, 653, & 654, fig. 47 & 48. 1977; Powell, *Econ. Bot.* 31: 424. 1977.

Additional illustrations: J. Mukherjee, *Trans. Bose Res. Inst.* 35: 38, text fig. 1 & pl. 1, fig. 1—5. 1972; León & Alain, *Fl. Cuba*, imp. 2, 2: 294, fig. 127. 1974; López-Palacios, *Fl. Venez. Verb.* [208] & [214], fig. 47 & 48 (1—4). 1977.

Mukherjee (1972) describes the pollen-grains of this species on the basis of Pringle s.n. [Hills & plains near Chihuahua; August-September, 1895] in the Central National Herbarium at Calcutta, as: "3-porate, pore lalongate, about 5.5  $\mu$  x 11.0  $\mu$  (range 4.0  $\mu$  — 7.5  $\mu$  x 9.0  $\mu$  — 12.5  $\mu$ ), provided with thick annulus, devoid of any pattern. Ora lalongate, about 4.0  $\mu$  x 10.0  $\mu$  (range 2.5  $\mu$  — 7.0  $\mu$  x 8.5  $\mu$  — 12.0  $\mu$ ) with thin margin. Mean interporal distance  $\pm$  4.2  $\mu$ . Prolate, P/E about 122.0  $\mu$  x 86.0  $\mu$  (range 112.0  $\mu$  — 145.0  $\mu$  x 75.0  $\mu$  — 96.0  $\mu$ ). Exine  $\pm$  6.0  $\mu$  thick. Sexine  $\pm$  4.5  $\mu$  thick, punctitellate, puncta at polar regions are sparsely distributed and larger in size whereas at equatorial region they are smaller and sometimes form channels by merging. Bacula sparsely distributed but instead of standing over nexine, they are supported by a common irregular sexinal mass. Nexine  $\pm$  1.5  $\mu$  thick. NPC classification 346."

Recent collectors describe this plant as an "infrequent annual" or as a "weed", 20—70 cm. tall, and report it "common in cornfields" or "growing with Kallstroemia, Argemone, grasses, composites, etc.", at altitudes of 800—1200 m., flowering in October. The vernacular name, "verbena", is reported for it. Hill (1976) cites Hill 2213 from Long Island, Bahamas.

The corollas are said to have been "purple" on Molina R. 27186, "dark-pink" on Poole & Watson 1111, and "violet" on López-Palacios 3613.

Sweet (1826) calls this species the "Germander-leaved stachytarpheta" and asserts that it was introduced into English gardens from the West Indies in 1699. The Contreras 5669, cited below, was previously cited by me as var. brevirostra Grenz. — the fruit is too immature to observe its diagnostic characters, but the propor-

tionately large-sized leaves on the specimen cited here seems to point to typical B. prismatica rather than var. brevirostra.

The López-Palacios 3628, distributed as B. prismatica, seems to me to be better regarded as representing B. boyacana Moldenke, while Heyde & Lux 2966, Torke, Dunn, & Ellis 346, and Weberling 961 are B. prismatica var. brevirostra Grenz., Herb. Kummer s.n. [Hortus bot. Monacensis 1826] is xStachytarpheta adulterina Urb. & Ekm., Herb. Schreber s.n., Herb. Zuccarini s.n., & Herb. Univ. Ludov. Maximil. s.n. are S. cayennensis (L. C. Rich.) Vahl, and Herb. Kummer s.n. [Hort. Bot. Monac.] and Herb. Reg. Monac. s.n. are S. urticaefolia (Salisb.) Sims.

López-Palacios (1977) cites the following collections from Venezuela: Anzoátegui: Pefialoza 4902. Aragua: Benítez de Rojas 48, 81; Fendler 853; Fernández 480, 575; Lasser 847, 931; Montaldo 3739; Pittier 5830, 5832; Vogl 311. Barinas: López-Palacios 3095. Carabobo: Asplund 15104; Saer 887. Federal District: Bailey & Bailey 784; Eggers 13069; Fendler 853; Goldmers s.n.; Grosourdy Cat. 13 s.n.; Kuntze 1345; Moldenke & Moldenke 91564; Moritz 293b; Otto 797; E. Pittier 72; H. Pittier 7837, 9720; Vargas 48; Wagner 44. Guárico: Velasco 55. Lara: Burkart 16621; Trujillo 6509, 6585, 6600, 6688. Mérida: Vareschi & Pannier 1546. Miranda: L. Cárdenas 215. Sucre: Torres 1869, 1910. Táchira: Steyermark 10029. Trujillo: Reed 1069. He also cites Ginés 4031, G. L. 22, 209, and Miller & Johnston 205 from Margarita Island. In a personal communication to me he lists the following vernacular names: "arrocillo", "cebada de monte", "rabo de zorro", "verbena de Castilla", and "verbena negra".

Additional citations: MEXICO: Yucatán: Lundell & Lundell 7876 (Au—192586). GUATEMALA: El Petén: Contreras 1523 (Au—228073), 3311 (Au—228064), 5669 (Ld). HONDURAS: Copán: Poole & Watson 1111 (Ld). Morazán: Molina R. 27186 (W—2735811). BAHAMA ISLANDS: Deadman's: D. S. Correll 44919 (N). JAMAICA: Crosby, Hespenheide, & Anderson 132 (Ld). HISPANIOLA: Dominican Republic: Ekman H.12504 (Ld). PUERTO RICO: Sintenis 2117 (Ac); I. Vélez 509 (Lv). COLOMBIA: Santander: López-Palacios 3613 (Ld, N). Valle del Cauca: Cuatrecasas 22128 (W—2817217), 22696 (W—2817223).

BOUCHEA PRISMATICA var. BREVIROSTRA Grenz.

Additional bibliography: Buek, Gen. Spec. Syn. Candoll. 3: 447. 1858; G. W. Thomas, Tex. Fl. Ecolog. Summ. 17. 1969; Hinton & Rzedowski, Anal. Esc. Nac. Cienc. Biol. 21: 40. 1975; Moldenke, Biol. Abstr. 60: 68. 1975; Moldenke, Phytologia 30: 185—186 (1975) and 34: 254. 1976; López-Palacios, Fl. Venez. Verb. 207, 212—[214], 647, 649, 651, & 654, fig. 48 (9—12). 1977.

Additional illustrations: López-Palacios, Fl. Venez. Verb. [214], fig. 48 (9—12). 1977.

Recent collectors have encountered this plant at altitudes of 300—1830 meters, growing in shrubby secondgrowth and in

"areas of giant tree cacti in Acacia thorn forest where the main crop in the area is sugarcane", flowering and fruiting in January, June, August, September, and November. The corollas on Breedlove 27654 are said to have been "lavender" when fresh, while on Contreras 8731 they were "carmine-lilac", on Colaris 1538 "lilac-blue", on López-Palacios 4026 "rose", and on Fosberg 54067 "rose-pink". Fosberg refers to the plant as a "pleasantly aromatic herb", growing on open ground in dry brush vegetation on steep slopes. López-Palacios describes it as 10—60 cm. tall. In his 1977 work he cites the following collections from Venezuela: Aragua: Burkart 16914; L. Cárdenas 93; Trujillo 1565.

Material of this variety has been misidentified and distributed in some herbaria as Stachytarpheta mutabilis (Jacq.) Vahl as "Acanthaceae". On the other hand, Contreras 5669, previously cited by me as B. prismatica var. brevirostra, seems, on re-examination, better placed as typical B. prismatica (L.) Kuntze; its fruits are too immature to exhibit their diagnostic characters, but the large size of the leaves seems to point to the typical form of the species rather than to the present variety.

Additional citations: MEXICO: Aguascalientes: R. McVaugh 16633 (Au—236054). Chiapas: Breedlove 12080 (Ld), 27654 (N). Hidalgo: González Q. 2637 (Ld). Jalisco: R. McVaugh 16313 (Au—236151). Nayarit: Feddema 595 (Au—263619). Oaxaca: Colaris 1538 (Ut—328620B). Puebla: Torke, Dunn, & Ellis 346 (Ld, N). GUATEMALA: El Petén: Contreras 8731 (W—2795350). Santa Rosa: Heyde & Lux 2966 (Mu—1781). EL SALVADOR: Chalatenango: Weberling 961 (Mu). VIRGIN ISLANDS: St. Croix: F. R. Fosberg 54067 (W—2775062). COLOMBIA: Nariffo: López-Palacios 4026 [=4036] (Ld).

#### BOUCHEA PRISMATICA var. LACINIATA Grenz.

Additional bibliography: Moldenke, *Phytologia* 29: 62. 1974; Hinton & Rzedowski, *Anal. Esc. Nac. Cienc. Biol.* 21: 40. 1975.

#### BOUCHEA PRISMATICA var. LONGIROSTRA Grenz.

Additional bibliography: León & Alain, *Fl. Cuba, imp. 2, 2*: 295. 1974; Hinton & Rzedowski, *Anal. Esc. Nac. Cienc. Biol.* 21: 40.

1975; Moldenke, *Biol. Abstr.* 60: 68. 1975; Moldenke, *Phytologia* 30: 183 & 186. 1975; Molina R., *Ceiba* 19: 95. 1975; López-Palacios, *Fl. Venez. Verb.* 207, 213—[214], & 647, fig. 48 (5—8). 1977.

Additional illustrations: López-Palacios, *Fl. Venez. Verb.* [214], fig. 48 (5—8). 1977.

Recent collectors describe this plant as erect, with spreading branches, the "estilo a veces algo persistente", and have found it growing in vacant lots and waste areas and on open rocky slopes on coppice-covered hills, at 100—800 m. altitude, flowering and fruiting in March and November. The corollas are said to have been "blue" on Correll 46213 and López-Palacios 2564 and "pink" on Correll 49113 and on Correll & Correll 42376.



López-Palacios (1977) cites the following collections from Venezuela: Bolívar: Holt & Gehriger 174; N. G. S. 274. Federal District: Alston 5438; Moritz 293; Pittier 7887; Vogl 559. Mérida: Breteler 4066; López-Palacios 2564; E. Reed 587; Ruiz-Terán & López-Figueiras 9289; Ruiz-Terán & López-Palacios 6177. He comments that Moritz 293 is plainly this variety, but that the label on the specimen in the "ABSM" [Moss Herbarium, American Bryological Society, Durham, North Carolina] is inscribed "Stachytarpheta umbrosa".

Additional citations: BAHAMA ISLANDS: Cat: D. S. Correll 46213 (N). Little Exuma: Correll & Correll 42376 (Ld). Long: D. S. Correll 49113 (N). JAMAICA: C. D. Adams 5511 (Mu). VENEZUELA: Federal District: Oberwinkler & Oberwinkler 14529 (Mu). Mérida: López-Palacios 2564 (Mu).

BOUCHEA PSEUDOCASCANUM (Walp.) Grenz.

Additional synonymy: Bouchea lactevirens Mukherjee, Trans. Bose Res. Inst. 35: 41, sphalm. 1972.

Additional bibliography: Buek, Gen. Spec. Syn. Candoll. 3: 64, 448, & 557—558. 1858; J. Mukherjee, Trans. Bose Res. Inst. 35: 41. 1972; R. D. Gibbs, Chemotax. Flow. Pl. 4: 1753, 1754, & 2058. 1974; Moldenke, Phytologia 29: 63—64. 1974; Kooiman, Act. Bot. Neerl. 24: 463 & 465. 1975; Moldenke, Phytologia 34: 258. 1976.

Gibbs (1974) reports cyanogenesis and leucoanthocyanin absent from the leaves of this species and syringin absent from the stems; the Ehrlich test gives a positive (lilac-blue) reaction in the leaves, but the Juglone test gives negative results in the leaves and bark and the HCl methanol test is also negative.

Hatschbach & Kummrow describe the plant as an herb, 70 cm. tall, with lilac-colored corollas, and found it growing in capoeira vegetation, flowering in March.

Additional citations: BRAZIL: Maranhão: Hatschbach & Kummrow 38461 (Ld).

BOUCHEA RUSBYI Moldenke

Additional bibliography: Moldenke, Biol. Abstr. 60: 68. 1975; Moldenke, Phytologia 30: 186 & 208. 1975; Hocking, Excerpt. Bot. A. 28: 257. 1976.

BOUCHEA SPATHULATA Torr.

Additional bibliography: G. W. Thomas, Tex. Pl. Ecol. Summ. 77. 1969; Moldenke, Phytologia 29: 64—65. 1974; Hocking, Excerpt. Bot. A. 26: 6. 1975; Moldenke, Phytologia 34: 251. 1976.

Recent collectors have found this plant growing in flat "bajada with a few eolian coppice mounds, the soil gypseous and saline, pale, fine-textured, desert, associated with Atriplex, Nama, and Allenrolfea", in "matorral inerme" vegetation on gently sloping limestone hillsides in calcareous gravelly soil, in "izotal" vegetation on steep limestone slopes, in deep calcareous clay-loam, in massive bedded limestone in "crasiosulifolios espinosos y izotal"

vegetation, on steep slopes of gypsum and limestone, in calcareous gravel or almost pure crumbly gypsum soil (higher up with patches of chaparral), in thin, whitish, calcareous, gravelly loam on south-facing limestone hillsides, and in limestone gravel on limestone slopes, at altitudes of 500—2100 m., flowering from April to July and in September and November. They describe it as a shrub to 1 m. tall and have found it growing in association with Yucca carnerosana, Koeberlinia spinosa, Agave lecheguilla, Celtis pallida, Zizyphus obtusifolia, Yucca torreyi, Leucaena retusa, Acacia neovernicosa, Parthenium incanum, Viguiera stenoloba, Ephedra sp., Acacia spp., Larrea sp., Dasyliirion sp., Opuntia sp., Quercus sp., Cercis sp., Condalia sp., Hechtia sp., Vauquelinia sp., Cercocarpus, Pinus, and Berberis. Henrickson refers to it as "scattered" on open limestone slopes, while Johnston and his associates report it "common locally on limestone south-facing hillsides on sides of arroyos in deep pale calcareous desert loam, associated with Berberis trifoliolata."

The corollas are said to have been "violet" on Johnston & al. 7604 and Wendt & al. 10107, "red-purple" on Henrickson 11462, and "mostly rose-violet but some scattered white" on Chiang & al. 7607b. Thomas (1969) calls the species the "spoonleaf bouchea".

The Henrickson 12973, distributed as typical B. spathulata, actually represents var. longiflora Moldenke.

Additional citations: MEXICO: Coahuila: Chiang, Wendt, & Johnston 7607b (Ld), 7610 (Ld, Te—69953), 7728 (Ld), 9250 (Ld); Henrickson 11462 (Ld); Johnston, Chiang, & Wendt 7604 (Ld); Johnston, Chiang, Wendt, & Riskind 11844 (Ld); Johnston, Wendt, & Chiang 10589 1/2 (Ld), 11264 (Ld); Wendt, Chiang, & Johnston 10107 (Ld).

#### BOUCHEA SPATHULATA var. LONGIFLORA Moldenke

Additional bibliography: Moldenke, *Phytologia* 29: 65. 1974; Hocking, *Excerpt. Bot. A.* 26: 6. 1975; Moldenke, *Phytologia* 34: 251. 1976.

Recent collectors refer to this plant as a "frequent perennial" or as an "infrequent shrub" on southwest-facing canyons in limestone soil, on limestone hillsides, on limestone in canyons, and "in mostly izotal vegetation with chaparral higher up on limestone hills with occasional patches of anhydrite, in mostly limestone gravel with local patches of pure gypsum", associated with Agave lecheguilla, A. asperrima, A. falcata, Fraxinus greggii, Rhus virens, Yucca carnerosana, Y. thompsoniana, Fouquieria spp., Cercocarpus, Mimosa, Acacia, Dasyliirion, Larrea, Opuntia, Leucophyllum, Viguiera, and grasses. They describe it as a shrub about 1 1/2 feet tall and have encountered it at altitudes of 4100—6200 feet, flowering in August and September. The corollas are said to have been "violet" on Johnston & al. 12130, "light-violet" on Hendrickson 12213, "lavender-purple" on Hendrickson 14244, and "bluish-purple or purple-blue" on Hendrickson 12920.

Additional citations: MEXICO: Chihuahua: Henrickson 12920 (Ld), 12973 (Ld). Coahuila: Henrickson 12213 (Ld), 11244 (Ld); Johnston, Chiang, Wendt, & Henrickson 12130 (Ld).

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ADDITIONAL NOTES ON THE GENUS BURROUGHSIA. II

Harold N. Moldenke

BURROUGHSIA Moldenke

Additional bibliography: Roulean, Guide Ind. Kew. 31. 1970; Hocking, Excerpt. Bot. A.26: 6. 1975; Moldenke, Biol. Abstr. 60: 68. 1975; Moldenke, Phytologia 30: 186—189. 1975.

BURROUGHSIA APPENDICULATA (Robinson & Greenm.) Moldenke

Additional bibliography: Hocking, Excerpt. Bot. A.26: 6. 1975; Moldenke, Biol. Abstr. 60: 68. 1975; Moldenke, Phytologia 30: 187—188. 1975.

Henrickson refers to this plant as an infrequent aromatic perennial and found it growing on flats and on slopes around lakes, at altitudes of 1030—1115 m., in association with Atriplex obovata, A. stewartii, Suaeda suffrutescens, Bouteloua, Croton, Dyssodia, Euphorbia, Gilia, Sporobolus, and many perennial herbs. He found it flowering in September. On his no. 14254 the corollas are said to have been "white-yellow, turning red in the center".

Additional citations: MEXICO: Coahuila: Henrickson 14254 (Ld), 14273b (Ld). San Luis Potosí: Pringle 4625 (Mu—1814—isotype).

BURROUGHSIA FASTIGIATA (T. S. Brandeg.) Moldenke

Additional bibliography: Hocking, Excerpt. Bot. A.26: 6. 1975; Moldenke, Biol. Abstr. 60: 68. 1975; Moldenke, Phytologia 30: 188—189. 1975.

A letter to me from Dr. George M. Hocking, dated February 11, 1976, informs me that "the true 'damiana'" of Mexico in the pharmaceutical trade is Turnera diffusa, not Burroughsia. Numerous collectors, have reported "damiana" as the name applied to Burroughsia fastigiata in Mexico by natives in localities where it grows.

Gentry & Cech encountered this plant on the margins of a dry lake in the Yucca-cardon-Fouquieria plant association, at an altitude of 500—600 feet, flowering in March.

Additional citations: MEXICO: Baja California: Gentry & Cech 8809 (Sd—86505, W—2811074); Wiggins 15086 (Au—200386).

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